### Appendix A

### **'336 PATENT**

#### **Claims 132 and 186**

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
background noise (claims 132 and 186)	Plain and ordinary meaning; however, to the extent that the Court deems a construction is required: "electromagnetic radiation produced independent of the lighting fixture"  Intrinsic Support:  '336 Patent at 4:29-39, 5:13-45, 20:6-26:11, 26:52-27:7, FIGs. 12-20, 21a-b, 26a-b, 27, and claims 33, 35, 132, and 186.  Extrinsic Support:  "the noise that typically affects a system but is produced independent of the system. The noise is typically due to thermal effects in materials, interpreted as the random motion of electrons, and the intensity depends on the temperature of the material. In radio channels, background noise is typically due to radiation that is inherent to the universe and due mainly to radiation from astronomical bodies. There is a fundamental lower bound on the intensity of such noise which is solely dependent on the universe and independent of antenna and receiver design."	Intrinsic Support:  22:28-40 ("To take into account this peak and valley relationship to high-quality white light, the following is desirable in a high-quality white light of one embodiment of this invention. The lowest valley in the visible range should have a greater intensity than the intensity attributable to background noise as would be understood by one of skill in the art. It is further desirable to close the gap between the lowest valley and the maximum peak, and other embodiments of the invention have lowest valleys with at least 5%, 10%, 25%, 33%, 50%, and 75% of the intensity of the maximum peaks. One skilled in the art would see that other percentages could be used anywhere up to 100%.")

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TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	Background Noise, COMPREHESIVE DICTIONARY OF ELECTRICAL ENGINEERING (2 <sup>nd</sup> ed. 2005).	

#### **'399 PATENT**

# Claim 7-8, 17-19, and 58-60

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
controller	Plain and ordinary meaning; however, to the extent	Means plus function term.
(claims 7, 8, 17, 58, 59, and 60)	that the Court deems a construction is required: "A circuit or component that controls"	Claim 7
	It is Signify's position that this is not a means-plusfunction term governed by § 112 ¶ 6.	Function: receive a power-related signal from an alternating current (A.C.) power source that provides
	To the extent that the Court finds that the term is governed by § 112 ¶ 6, Signify has proposed alternate structures and functions for each asserted claim.	signals other than a standard A.C. line voltage, provide power to the at least one LED based on the power-related signal, variably control at least one parameter of light generated by the at least one LED
	Claim 7	in response to operation of the user interface, and variably control the at least one parameter of the light
	Functions:	based at least on the variable duty cycle of the power-related signal.
	<ul> <li>receive a power-related signal from an</li> </ul>	
	alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage	Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is programmed
	<ul> <li>provide power to the at least one LED based on the power-related signal</li> </ul>	according to '399 Patent at 17:7-48.
	variably control at least one parameter of	Claim 8
	light generated by the at least one LED in response to operation of the user interface	Function: receive a power-related signal from an
		alternating current (A.C.) power source that provides

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	<ul> <li>variably control the at least one parameter of the light based at least on the variable duty cycle of the power-related signal</li> <li>Structure: may comprise any of the following:</li> <li>(a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;</li> </ul>	signals other than a standard A.C. line voltage, provide power to the at least one LED based on the power-related signal, variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface wherein the one parameter includes at least one of an intensity of the light, a color of the light, a color temperature of the light, and a temporal characteristic of the light, variably control the at least one parameter of the light based at least on the variable duty cycle of the power-related signal.
	(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or 11 (for the drive circuitry); and described in the specification;	Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is programmed according to '399 Patent at 17:7-48.
	and/or structural equivalents thereof.	<u>Claim 17</u>
	Claim 8  Functions:  • receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage	Function: receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage, provide power to the at least one LED based on the power-related signal, and variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface.
		Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	provide power to the at least one LED based on the power-related signal	drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is programmed according to '399 Patent at 17:7-48.
	variably control the at least one parameter of the light based at least on the variable duty cycle of the power-related signal	<u>Claim 58</u>
	• variably control the at least one parameter of the light that is variably controlled by the at least one controller in response to operation of the user interface includes at least one of an intensity of the light, a color of the light, a color temperature of the light, and a temporal characteristic of the light.	Function: receive first power from an alternating current (A.C.) dimmer circuit, provide second power to the at least one LED based on the first power, and provide the second power as a varying power to the at least one LED based on variations of the first power.
	Structure: may comprise any of the following:  (a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;	Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is programmed according to '399 Patent at 17:7-48.
	(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or 11 (for the drive circuitry); and described in the specification;	Function: receive first power from an alternating current (A.C.) dimmer circuit, provide second power to the at least one LED based on the first power, and variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface.

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	and/or structural equivalents thereof.  Claim 17	Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and drive circuitry), and structural equivalents thereof,
	Functions:	wherein the processor 102 in Fig. 7 is programmed according to '399 Patent at 17:7-48.
	<ul> <li>receive a power-related signal from an alternating current (A.C.) power source</li> </ul>	<u>Claim 60</u>
	that provides signals other than a standard A.C. line voltage	Function: receive first power from an alternating current (A.C.) dimmer circuit, provide
	<ul> <li>provide power to the at least one LED based on the power-related signal</li> </ul>	second power to the at least one LED based on the first power, and variably control at least one parameter of light generated by the at least one LED in response to
	variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface	operation of the user interface wherein the one parameter includes at least one of an intensity of the light, a color of the light, a color temperature of the light, and a temporal characteristic of the light.
	Structure: may comprise any of the following:  (a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;	Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is programmed according to '399 Patent at 17:7-48.
	(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or	Intrinsic Support: 6:18-28; 13:25-41; 14:8-18; 14:19-40

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	11 (for the drive circuitry); and described in the specification;	
	and/or structural equivalents thereof.	
	<u>Claim 58</u>	
	Functions:	
	• receive first power from an alternating current (A.C.) dimmer circuit	
	<ul> <li>provide second power to the at least one LED based on the first power</li> </ul>	
	<ul> <li>provide the second power as a varying power to the at least one LED based on variations of the first power</li> </ul>	
	Structure: may comprise any of the following:	
	(a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;	
	(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	11 (for the drive circuitry); and described in the specification;	
	and/or structural equivalents thereof.	
	<u>Claim 59</u>	
	Functions:	
	receive first power from an alternating current (A.C.) dimmer circuit	
	provide second power to the at least one LED based on the first power	
	variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface	
	Structure: may comprise any of the following:	
	(a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;	
	(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	11 (for the drive circuitry); and described in the specification;	
	and/or structural equivalents thereof.	
	Claim 60	
	Functions:	
	receive first power from an alternating current (A.C.) dimmer circuit	
	<ul> <li>provide second power to the at least one LED based on the first power</li> </ul>	
	• variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface, wherein the at least one parameter of the light that is variably controlled by the at least one controller in response to operation of the user interface includes at least one of an intensity of the light, a color of the light, a color temperature of the light, and a temporal characteristic of the light	
	Structure: may comprise any of the following:	
	(a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	embodiments of those components as shown in FIG. 6 and described in the specification;	
	(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or 11 (for the drive circuitry); and described in the specification;	
	and/or structural equivalents thereof.	
	Intrinsic Support:	
	Intrinsic support for controller includes both processor-based and non-processor-based examples ( <i>see</i> discussion at 10:43-12:4). Non-processor-based exemplary embodiments of controller are described in connection with FIGs. 3-6 (12:21-14:49). Processor-based exemplary embodiments of controller are described in connection with FIGs. 7-11 (14:51-24:44). Additionally, claims 1-4, 7-13, 17-23, 25-32, 34-40, 42-47, 49-50, 52-60, and 62-63 relate to the controller (including method equivalents of controller).	
	Extrinsic Support:	
	"A device or group of devices that serves to govern, in	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	some predetermined manner, the electrical power delivered to the apparatus to which it is connected." <i>Controller</i> , MODERN DICTIONARY OF ELECTRONICS (7 <sup>TH</sup> ed. 1999).	
	"An instrument that continuously measures the value of a variable quantity or condition and then automatically acts on the controlled equipment to correct any deviation from a desired preset value. Also known as automatic regulator; controller." <i>Automatic Controller</i> , MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (5 <sup>th</sup> ed. 1993).	
	"1. A circuit board or device which controls the way peripheral devices access the computer, and vice versa. It is usually contained on a single chip. Examples include disk controllers, graphics controllers, and video controllers. Also called peripheral controller, or host adapter. 2. A signal, circuit, device, or system which controls any given mechanism, function, process, or piece of equipment. An example is an infrared remote control for	
	electronic equipment. 3. A circuit, mechanism, device, or system, which monitors one or more variables, and automatically makes the necessary adjustments in order to maintain operation within the specified parameters. Also known as automatic controller. 4. The computer and programs which control a robot. Also called controller system, or robot controller."	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	Controller, WILEY ELECTRICAL AND ELECTRONICS ENGINEERING DICTIONARY (2004).	
	"1. The control signal of an electronic control (or servo), system. 2. A device, such as a specialized variable resistor, used to adjust current or voltage. 3. A computer that oversees and controls the operation of a robot or fleet of robots." <i>Controller</i> , THE ILLUSTRATED DICTIONARY OF ELECTRONICS (8 <sup>th</sup> ed. 2001).	
	"[A controller is] a circuit or component that controls." <i>Koninklijke Philips Electronics, NV, et al. v. Defibtech LLC</i> , et al. 2005 U.S. Dist. LEXIS 39859 (W.D. Wash, Dec. 21, 2005).	
adjustment circuit (claims 17, 19)	Plain and ordinary meaning; however, to the extent that the Court deems a construction is required: "A circuit that adjusts"  To the extent that the Court finds that the term is governed by § 112 ¶ 6, Signify proposes the following	Means plus function term.  Function: variably control the at least one parameter of light based on the varying power-related signal.  Structure: the components of adjustment circuit 208 that
	alternate structure and function:  Claim 17  Function: variably control the at least one parameter of light based on the varying power-related signal.	are shown in FIG. 6 and structural equivalents thereof Intrinsic support: 14:9-18; 14:19-40

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	Structure: may comprise any of the following:  (a) adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including the exemplary embodiments of those components as shown in FIG. 6;  (b) processor 102, power circuitry 108, and drive circuitry 109 as illustrated in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for power circuitry including the adjustment circuit 208 of FIG. 6) and described in the specification and either FIGs. 9 or 10 or 11 (for the drive circuitry) and described in the specification;  and/or structural equivalents thereof.	
	<ul> <li>Claim 19</li> <li>Function: <ul> <li>variably control the at least one parameter of light based on the varying power-related signal.</li> <li>variably control the at least one LED based on the filtered rectified power-related signal.</li> </ul> </li> <li>Structure: may comprise any of the following:</li> </ul>	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	<ul> <li>(a) adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including the exemplary embodiments of those components as shown in FIG.</li> <li>6;</li> </ul>	
	(b) processor 102, power circuitry 108, and drive circuitry 109 as illustrated in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for power circuitry including the adjustment circuit 208 of FIG. 6) and described in the specification and either FIGs. 9 or 10 or 11 (for the drive circuitry) and described in the specification;	
	and/or structural equivalents thereof.  Intrinsic Support:	
	Intrinsic support for adjustment circuit includes the description of the adjustment circuit in connection with FIGs. 5 and 6 (14:1-50) and in connection with the processor, power circuitry, and drive circuits of FIGs. 7-11 (14:51-15:11, 15:40-56, 16:6-23, 16:40-24:44). Additionally, claims 7-13, 17, 19-23, 25-29, 34-39, 42-47, 49-50, 52-54, 58-60, 62-63 relate to the adjustment circuit particularly and/or adjustments made by the adjustment circuit (and method equivalents of the adjustment circuit).	
	Extrinsic Support:	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	"1. Path through which electrical signals flow. 2. An electronic path between two or more points capable of providing a number of channels. 3. A number of conductors connected together for the purpose of carrying an electrical current. 4. The interconnection of a number of devices in one or more closed paths to perform a desired electrical or electronic function. Examples of simple circuits are high- or low-pass filters, multivibrators, oscillators, and amplifiers. 5. A complete path of electron flow from a negative terminal of voltage source through a conductor and back to the positive terminal. 6. An electrical system using two or more wires in which the current flows from the source to one or more electrical devices and back again to the source of supply. 7. A complete, closed path. Confusion between circuit and network is common. Circuit refers to a closed path within a network. 8. An array of elements interconnected to perform functions beyond the range of single-element capability." <i>Circuit</i> , MODERN DICTIONARY OF ELECTRONICS (7 <sup>TH</sup> ed. 1999).	
power circuitry (claims 17, 18)	Plain and ordinary meaning; however, to the extent that the Court deems a construction is required: "Components of a circuit that provides power"	Means plus function term.  Function: provide at least the power to the at least one
	It is Signify's position that this is not a means-plus- function term governed by § 112 ¶ 6. To the extent that the Court finds that the term is governed by § 112	LED based on the varying power related signal.  Structure: Components in Fig. 6 (404, 408, 402), and their structural equivalents

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	¶ 6, Signify has proposes the following alternate structure and function:	Intrinsic support:
	<u>Claims 17-18</u>	13:25-41; 14:19-40
	Functions: provide power to the at least one LED based on the varying power-related signal.	
	Structure: may comprise any of the following:	
	(a) rectifier 404, low-pass filter 408 and DC converter 402 as illustrated in FIG. 3 and described in the specification, including the exemplary embodiments of those components as shown in FIG. 4 and described in the specification, and as further illustrated in FIG. 5, including the exemplary embodiments of those components as shown in FIG. 6 and described in the specification;	
	(b) power circuitry 108 as illustrated in FIG. 7 and described in the specification, including the exemplary embodiments of power circuitry 108 as shown in FIG. 8 and described in the specification;	
	and/or structural equivalents thereof.	
	Intrinsic Support:	
	Intrinsic support for power circuitry includes the description of the circuits of FIGs. 3-6 (12:50-14:49),	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	and FIGs. 7-8 (18:44-19:16). Additionally, claims 1-3, 7, 17-18, 21, 30-32, 34, 42, 44, 47, 57-59 relate to the power circuitry (including method equivalents of power circuitry).	
	Extrinsic Support:	
	"1. Path through which electrical signals flow. 2. An electronic path between two or more points capable of providing a number of channels. 3. A number of conductors connected together for the purpose of carrying an electrical current. 4. The interconnection of a number of devices in one or more closed paths to perform a desired electrical or electronic function. Examples of simple circuits are high- or low-pass filters, multivibrators, oscillators, and amplifiers. 5. A complete path of electron flow from a negative terminal of voltage source through a conductor and back to the positive terminal. 6. An electrical system using two or more wires in which the current flows from the source to one or more electrical devices and back again to the source of supply. 7. A complete, closed path. Confusion between circuit and network is common. Circuit refers to a closed path within a network. 8. An array of elements interconnected to perform functions beyond the range of single-element capability." <i>Circuit</i> , MODERN DICTIONARY OF ELECTRONICS (7 <sup>TH</sup> ed. 1999).	
	"1. The science of designing electric or electronic	

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TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	circuits. 2. The circuits themselves. 3. The components of such circuits." <i>Circuitry</i> , RANDOM HOUSE WEBSTER'S UNABRIDGED DICTIONARY (2 <sup>nd</sup> ed. 1997)	
	"1: the detailed plan of an electric circuit or network (as of a radio or television receiver) 2: the components of an electrical circuit or network (as tubes and resistors)." <i>Circuitry</i> , Webster's Third New International Dictionary (2002).	
	"The wires that carry current to electric motors and other devices that use electric power." <i>Power Circuit</i> , MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (5 <sup>th</sup> ed. 1993).	

#### **'138 PATENT**

# Claim 1, 9-11, and 20-22

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
controller	Plain and ordinary meaning; however, to the	Means plus function term.
(claim 1, 9-11, and 20)	extent that the Court deems a construction is required: "A circuit or component that controls"	Claims 1
	It is Signify's position that this is not a meansplus-function term governed by § 112 ¶ 6.	Function: receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage, provide
	To the extent that the Court finds that the term is governed by § 112 ¶ 6, Signify has proposed	power to the at least one LED based on the power-related signal.
	alternate structures and functions for each asserted claim.	Structure: Components depicted in Fig. 4, or Components depicted in FIG. 6; or the components depicted in FIGs. 8-
	Claims 1	11 (power circuitry and drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is
	Functions:	programmed according to '138 Patent at 17:9-50.
	• receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage	Claims 9 and 20  Function: receive a power-related signal from an alternating current (A.C.) power source that provides
	<ul> <li>provide power to the at least one LED based on the power-related signal</li> </ul>	signals other than a standard A.C. line voltage, provide power to the at least one LED based on the power-related signal, and variably control at least one parameter of light
	Structure: may comprise any of the following:	generated by the at least one LED in response to operation of the user interface.

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	(a) rectifier 404, low-pass filter 408 and DC converter 402 as illustrated in FIG. 3 and described in the specification, including the exemplary embodiments of those components as shown in FIG. 4 and described in the specification;	Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is programmed according to '138 Patent at 17:9-50.
	<ul> <li>(b) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;</li> <li>(c) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or 11 (for the drive circuitry); and described in the specification; and/or structural equivalents thereof.</li> <li>Claims 9 and 20</li> <li>Functions:</li> </ul>	Function: receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage, provide power to the at least one LED based on the power-related signal, variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface, and variably control the at least one parameter of the light based at least on the variable duty cycle of the power-related signal.  Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is programmed according to '138 Patent at 17:9-50.
	• receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage	Claim 11  Function: receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage, provide

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	<ul> <li>provide power to the at least one LED based on the power-related signal</li> <li>variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface</li> <li>Structure: may comprise any of the following:</li> <li>(a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the</li> </ul>	power to the at least one LED based on the power-related signal, variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface wherein the one parameter includes at least one of an intensity of the light, a color of the light, a color temperature of the light, and a temporal characteristic of the light.  Structure: Components depicted in FIG. 6; or the components depicted in FIGs. 8-11 (power circuitry and drive circuitry), and structural equivalents thereof, wherein the processor 102 in Fig. 7 is programmed according to '138 Patent at 17:9-50.
	specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;	Intrinsic support:
	(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or 11 (for the drive circuitry); and described in the specification;	6:28-37; 12:64-13:11; 13:28-44; 14:9-21; 14:22-43.
	and/or structural equivalents thereof.	
	Claim 10	
	Functions:	
	<ul> <li>receive a power-related signal from an alternating current (A.C.) power source</li> </ul>	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	that provides signals other than a standard A.C. line voltage	
	<ul> <li>provide power to the at least one LED based on the power-related signal</li> </ul>	
	<ul> <li>variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface</li> </ul>	
	<ul> <li>variably control the at least one parameter of the light based at least on the variable duty cycle of the power- related signal</li> </ul>	
	Structure: may comprise any of the following:	
	(a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;	
	(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	either FIGS. 9 or 10 or 11 (for the drive circuitry); and described in the specification;	
	and/or structural equivalents thereof.	
	Claim 11	
	Functions:	
	<ul> <li>receive a power-related signal from an alternating current (A.C.) power source that provides signals other than a standard A.C. line voltage</li> <li>provide power to the at least one LED based on the power-related signal</li> <li>variably control at least one parameter of light generated by the at least one LED in response to operation of the user interface, wherein the at least one parameter of the light that is variably controlled by the at least one controller in</li> </ul>	
	response to operation of the user interface includes at least one of an intensity of the light, a color of the light, a color temperature of the light, and a temporal characteristic of the light  Structure: may comprise any of the following:	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	<ul> <li>(a) rectifier 404, low-pass filter 408, DC converter 402 and adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including exemplary embodiments of those components as shown in FIG. 6 and described in the specification;</li> <li>(b) controller 204B as illustrated in in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for the power circuitry) and either FIGS. 9 or 10 or 11 (for the drive</li> </ul>	
	circuitry); and described in the specification; and/or structural equivalents thereof.  Intrinsic Support:	
	Intrinsic support for controller includes both processor-based and non-processor-based examples ( <i>see</i> discussion at 10:49-12:7). Non-processor-based exemplary embodiments of controller are described in connection with FIGs. 3-6 (12:25-14:52). Processor-based exemplary embodiments of controller are described in connection with FIGs. 7-11 (14:53-24:45). Additionally, claims 1-5, 9-16, 20-26, and 28-34 relate to the controller (including method equivalents of controller).	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	Extrinsic Support:  "A device or group of devices that serves to govern, in some predetermined manner, the electrical power delivered to the apparatus to which it is connected." <i>Controller</i> , MODERN DICTIONARY OF ELECTRONICS (7 <sup>TH</sup> ed. 1999).	
	"An instrument that continuously measures the value of a variable quantity or condition and then automatically acts on the controlled equipment to correct any deviation from a desired preset value. Also known as automatic regulator; controller." <i>Automatic Controller</i> , MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (5 <sup>th</sup> ed. 1993).	
	"1. A circuit board or device which controls the way peripheral devices access the computer, and vice versa. It is usually contained on a single chip. Examples include disk controllers, graphics controllers, and video controllers. Also called peripheral controller, or host adapter. 2. A signal, circuit, device, or system which controls any given mechanism, function, process, or piece of equipment. An example is an infrared remote control for electronic equipment. 3. A circuit, mechanism, device, or system, which monitors one or more variables, and automatically makes	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	the necessary adjustments in order to maintain operation within the specified parameters. Also known as automatic controller. 4. The computer and programs which control a robot. Also called controller system, or robot controller." <i>Controller</i> , WILEY ELECTRICAL AND ELECTRONICS ENGINEERING DICTIONARY (2004).	
	"1. The control signal of an electronic control (or servo), system. 2. A device, such as a specialized variable resistor, used to adjust current or voltage. 3. A computer that oversees and controls the operation of a robot or fleet of robots." <i>Controller</i> , THE ILLUSTRATED DICTIONARY OF ELECTRONICS (8 <sup>th</sup> ed. 2001).	
	"[A controller is] a circuit or component that controls." <i>Koninklijke Philips Electronics, NV, et al. v. Defibtech LLC</i> , et al. 2005 U.S. Dist. LEXIS 39859 (W.D. Wash, Dec. 21, 2005).	
adjustment circuit (claim 20 and 22)	Plain and ordinary meaning; however, to the extent that the Court deems a construction is	Means plus function term.
(**************************************	required: "A circuit that adjusts"	Function: variably control the at least one parameter of light based on the varying power-related signal.
	It is Signify's position that this is not a meansplus-function term governed by § 112 ¶ 6.	Structure: the components of adjustment circuit 208 that are shown in FIG. 6 and structural equivalents thereof
	To the extent that the Court finds that the term is	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	governed by § 112 ¶ 6, Signify has proposed alternate structures and functions for each asserted claim.	Intrinsic support: 14:11-21; 14:22-43
	Claim 20  Function: variably control the at least one parameter of light based on the varying power-related signal.  Structure: may comprise any of the following:  (a) adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including the exemplary embodiments of those components as	
	shown in FIG. 6;  (b) processor 102, power circuitry 108, and drive circuitry 109 as illustrated in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for power circuitry including adjustment circuit 208 of FIG. 6) and described in the specification and either FIGs. 9 or 10 or 11 (for the drive circuitry) and described in the specification;  and/or structural equivalents thereof.	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	<ul> <li>Claim 22</li> <li>Function: <ul> <li>variably control the at least one parameter of light based on the varying power-related signal.</li> <li>variably control the at least one LED based on the filtered rectified power-related signal.</li> </ul> </li> <li>Structure: may comprise any of the following: <ul> <li>(a) adjustment circuit 208 as illustrated in FIG. 5 and described in the specification, including the exemplary embodiments of those components as shown in FIG. 6;</li> <li>(b) processor 102, power circuitry 108, and drive circuitry 109 as illustrated in FIG. 7 and described in the specification, including exemplary embodiments of those components as shown in FIG. 8 (for power circuitry including the adjustment circuit 208 of FIG. 6) and described in the specification and either FIGs. 9 or 10 or 11 (for the drive circuitry) and described in the specification;</li> <li>and/or structural equivalents thereof.</li> </ul> </li> </ul>	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	Intrinsic Support:	
	Intrinsic support for adjustment circuit includes the description of the adjustment circuit in connection with FIGs. 5 and 6 (14:4-52) and in connection with the processor, power circuitry, and drive circuits of FIGs. 7-11 (14:53-15:13, 15:42-58, 16:8-25,16:42-24:45). Additionally, claims 9-16, 20, 22-23, 25-26, 28-34 relate to the adjustment circuit particularly and/or adjustments made by the adjustment circuit (and method equivalents of the adjustment circuit).	
	Extrinsic Support:	
	"1. Path through which electrical signals flow. 2. An electronic path between two or more points capable of providing a number of channels. 3. A number of conductors connected together for the purpose of carrying an electrical current. 4. The interconnection of a number of devices in one or more closed paths to perform a desired electrical or electronic function. Examples of simple circuits are high- or low-pass filters, multivibrators, oscillators, and amplifiers. 5. A complete path of electron flow from a negative terminal of voltage source through a conductor and back to the positive terminal. 6. An electrical system using two or more wires in which the current flows from the source to one or more	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	electrical devices and back again to the source of supply. 7. A complete, closed path. Confusion between circuit and network is common. Circuit refers to a closed path within a network. 8. An array of elements interconnected to perform functions beyond the range of single-element capability." <i>Circuit</i> , MODERN DICTIONARY OF ELECTRONICS (7 <sup>TH</sup> ed. 1999).	
power circuitry (claim 20 and 21)	Plain and ordinary meaning; however, to the extent that the Court deems a construction is required: "Components of a circuit that provides power"  It is Signify's position that this is not a meansplus-function term governed by § 112 ¶ 6.  To the extent that the Court finds that the term is governed by § 112 ¶ 6, Signify has proposed alternate structures and functions for each asserted claim.  Claim 20 and 21  Function: provide power to the at least one LED based on the varying power-related signal.  Structure: may comprise any of the following:  (a) rectifier 404, low-pass filter 408 and DC	Means plus function term.  Function: provide at least the power to the at least one LED based on the varying power related signal.  Structure: Components in Fig. 6 (402, 404, 408), and its structural equivalents  Intrinsic support:  13:28-44; 14:22-43

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	converter 402 as illustrated in FIG. 3 and described in the specification, including the exemplary embodiments of those components as shown in FIG. 4 and described in the specification, and as further illustrated in FIG. 5, including the exemplary embodiments of those components as shown in FIG. 6 and described in the specification;  (b) power circuitry 108 as illustrated in FIG. 7 and described in the specification, including the exemplary embodiments of power circuitry 108 as shown in FIG. 8 and described in the specification;  and/or structural equivalents thereof.	
	Intrinsic Support:  Intrinsic support for power circuitry includes the description of the circuits of FIGs. 3-6 (12:53-14:52) and FIGs. 7-8 (18:47-19:19).  Additionally, claims 1-5, 20-21, 24, and 33-34 relate to the power circuitry (including method equivalents of power circuitry).  Extrinsic Support:  "1. Path through which electrical signals flow. 2.	

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	An electronic path between two or more points capable of providing a number of channels. 3. A number of conductors connected together for the purpose of carrying an electrical current. 4. The interconnection of a number of devices in one or more closed paths to perform a desired electrical or electronic function. Examples of simple circuits are high- or low-pass filters, multivibrators, oscillators, and amplifiers. 5. A complete path of electron flow from a negative terminal of voltage source through a conductor and back to the positive terminal. 6. An electrical system using two or more wires in which the current flows from the source to one or more electrical devices and back again to the source of supply. 7. A complete, closed path. Confusion between circuit and network is common. Circuit refers to a closed path within a network. 8. An array of elements interconnected to perform functions beyond the range of single-element capability." <i>Circuit</i> , MODERN DICTIONARY OF ELECTRONICS (7 <sup>TH</sup> ed. 1999).	
	"1. The science of designing electric or electronic circuits. 2. The circuits themselves. 3. The components of such circuits." <i>Circuitry</i> , RANDOM HOUSE WEBSTER'S UNABRIDGED DICTIONARY (2 <sup>nd</sup> ed. 1997)  "1: the detailed plan of an electric circuit or	

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TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	network (as of a radio or television receiver) 2: the components of an electrical circuit or network (as tubes and resistors)." <i>Circuitry</i> , Webster's Third New International Dictionary (2002).  "The wires that carry current to electric motors and other devices that use electric power." <i>Power Circuit</i> , MCGRAW-HILL  DICTIONARY OF SCIENTIFIC AND  TECHNICAL TERMS (5 <sup>th</sup> ed. 1993).	

#### **'577 PATENT**

# Claim 1

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
connected in series (claim 1)	Plain and ordinary meaning.	"electrical current pass through [an inductor and the set of output terminals] in turn without branching."
	Intrinsic support:	
		Intrinsic evidence:
	'577 patent at 1:18-30, 1:60-63, 2:13-63, 3:18-	
	63, 4:7-27, FIGs. 1 and 2, and claims 1 and 4-7.	Specification:
	E-tribuia and a second	o Fig. 1 (18, 20a, 20b).
	Extrinsic support:	o Fig. 2 (18, 20a, 20b). o 1:61-63 ("The number of LEDs may be connected"
	"5. <i>Elec</i> . An arrangement of devices in a circuit,	in series, connected in parallel or may be arranged in sets
	in which the current flows sequentially through a	of LEDs connected in series, which sets are connected in
	series of components: used chiefly in the phrase in series" <i>Series</i> , WEBSTER'S NEW WORLD COLLEGE DICTIONARY (4 <sup>th</sup> ed. 1999).	parallel.")
	COLLEGE DICTIONART (4 cd. 1999).	Extrinsic evidence:
	"A number of things or events arranged in order	Extinsic cytolice.
	and connected by being alike in some way."	The Authoritative Dictionary of IEEE Standards Terms
	Series, THE MERRIAM-WEBSTER	(2000)
	DICTIONARY (2004).	· "series circuit"
	"1. The attachment of two of more component	o "A circuit supplying energy to a number of devices connected in series, that is, the same current
	parts so that conduction can take place between	passes through each device in completing its path to the
	them. 2. The point of such attachment."	source of supply"
	Connection, MODERN DICTIONARY OF	
	ELECTRONICS (7 <sup>th</sup> ed. 1999).	American Heritage College Dictionary (2002) ."series circuit"

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	Signify also intends to rely on the testimony of Dr. Regan Zane, a non-party expert witness, in support of Signify's proposed construction and in response to Defendants' proposed construction, including, but not limited to, information to be provided in declarations, depositions, or live testimony during the Signify's claim construction hearing. Specifically, Signify intends to present Dr. Zane's opinion regarding the meaning of this claim term to one of ordinary skill in the art and the accuracy of Defendants' proposed construction versus Signify's proposed construction based on the intrinsic and extrinsic evidence listed in this chart, as well as Dr. Zane's experience, expertise, and industry knowledge.	o "An electric circuit in which current passes through each circuit element in turn without branching."
coupled in series (claim 1)	Plain and ordinary meaning.  Intrinsic support:	"electrical current pass through [a primary winding of the transformer and the resonant capacitor] in turn without branching"
	'577 patent at 1:18-25, 1:60-63, 2:13-63, 3:18-63, 4:7-27, FIGs. 1 and 2, claims 1 and 4-7.	Intrinsic support:
	Extrinsic support:	Specification: o Fig. 1 (6, 8a, Ls, Lm). O Fig. 2 (6, 8a, Ls, Lm). O 3:18-29 ("FIG. 1 shows a circuit diagram of an
	"5. Elec. An arrangement of devices in a circuit, in which the current flows sequentially through a series of components: used chiefly in the phrase in series" Series, WEBSTER'S NEW WORLD	embodiment of a driver circuit 1 for operating one or more LEDs 2. The driver circuit 1 comprises a set of input terminals 4 a and 4 b and a resonant capacitor 6 connected in series to a primary winding 8 a of a transformer 8. A

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	"A number of things or events arranged in order and connected by being alike in some way." Series, THE MERRIAM-WEBSTER DICTIONARY (2004).  "The association or mutual relationship of two or more circuits or systems in such a way that power may be transferred from one to another." Coupling, MODERN DICTIONARY OF ELECTRONICS (7 <sup>th</sup> ed. 1999).	stray inductance Ls and a main inductance Lm of the primary winding 8 a are indicated. These inductances Ls and Lm are not actual elements, but are shown since these inductances Ls and Lm may be selected in combination with the capacitance of the resonant capacitor 6 such that zero voltage switching is obtained in a voltage source 24 connected to the input terminals 4 a and 4 b, improving the overall efficiency of the illustrated circuit.")  o 1:61-63 ("The number of LEDs may be connected in series, connected in parallel or may be arranged in sets of LEDs connected in series, which sets are connected in parallel.")
	Signify also intends to rely on the testimony of Dr. Regan Zane, a non-party expert witness, in support of Signify's proposed construction and in response to Defendants' proposed construction, including, but not limited to, information to be provided in declarations, depositions, or live testimony during the Signify's claim construction hearing.  Specifically, Signify intends to present Dr. Zane's opinion regarding the meaning of this claim term to one of ordinary skill in the art and the accuracy of Defendants' proposed construction versus Signify's proposed construction based on the intrinsic and extrinsic evidence listed in this chart, as well as Dr. Zane's experience, expertise, and industry knowledge.	Extrinsic Support:  The Authoritative Dictionary of IEEE Standards Terms (2000)  "series circuit"  • "A circuit supplying energy to a number of devices connected in series, that is, the same current passes through each device in completing its path to the source of supply"  American Heritage College Dictionary (2002)  "series circuit"  • "An electric circuit in which current passes through each circuit element in turn without branching."

### '604 PATENT

# **Claims 1-5, 8-10, and 12**

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
light-emitting module (claims 1-5, 8-10, and 12)	Term appears in preamble, no construction required; however, to the extent that the Court deems a construction is required: "A self-contained assembly of electronic components and circuitry for emitting light"  Intrinsic support:  '604 Patent 2:64-3:12.  Extrinsic support:  "1. A standardized part or independent unit used in construction, esp. of furniture, a building, or an electronic system." <i>Module</i> , THE OXFORD AMERICAN DICTIONARY AND LANGUAGE GUIDE (1999)  "4. <i>Electronics</i> A self-contained assembly of electronic components and circuitry, such as a stage in a computer, that is installed as a unit." <i>Module</i> , THE AMERICAN HERITAGE DICTIONARY (4 <sup>th</sup> ed. 2000)	Preamble is limiting.  Proposed construction:  "A packaged light emitting device designed for use with other light emitting devices"  Intrinsic support:  Specification:  o Fig. 2  o 4:46-49 ("Each of the heat dissipation element, substrate and housing element can be modularly formed, thereby enabling interchangability of these components, thereby providing versatility to the light-emitting module.")  o 1:5-8 ("The present invention pertains to the field of lighting systems and in particular to a light-emitting module with versatile electromechanical mounting, connecting, and assembly capabilities.")  o 2:47-54 ("While there are many designs of light-emitting modules that facilitate heat sinking with relatively easy wiring, the prior art designs may not be simple enough to improve manufacturing, simplify assembly, and provide ease of maintenance. Therefore, there is a need for a new lighting module that provides
		optical, mechanical, electrical, and thermal functionality

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
		and electromechanical connectivity in a modular form.")  o 2:64-65 ("An object of the present invention is to provide a light-emitting module.")  o 4:65-5:2 ("The light-emitting module according to the present invention is further configured to provide the ability to create a lighting system comprising multiple light-emitting modules through the interconnection of two or more light-emitting modules.")  o 5:59-63 ("As would be readily understood, lighting systems with various light-emitting module arrangements may be achieved by connecting desired numbers of light-emitting modules in any combination of series and/or parallel configurations. ')  o 6:46-53 ("As illustrated in FIG. 3, the light-emitting module can be assembled in a relatively easy manner, and further can provide a means for relatively easy replacement or repair of the module components. This configuration of the light-emitting module can further provide a mean for versatility of the light-emitting module based on the elemental configuration thereof for ease of changing of the components, for example changing of a housing element.")
		Extrinsic support:  New Oxford American Dictionary (2005)  "module"  • "each of a set of standardized parts or independent units that can be used to

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
		construct a more complex structure, such as an item of furniture or a building"  American Heritage College Dictionary (2002) . "module"  • "a standardized, often interchangeable
		components of a system or construction designed for easy assembly or flexible use."
Fastening means (claim 1)	Governed by § 112 ¶ 6.	Means plus function term.
	Structure: fastening means as described at 5:18-24, 6:18-24, 7:25-26, 7:42-51, 7:55-67 and/or identified by reference numeral 450 in FIG. 4, and equivalents	Function: releasably connecting the housing element to the heat dissipation element.
	thereof.	Structure: The tabs 450 shown in Fig. 4 and described in col. 7:42- 51, and their structural equivalents.
	Function: detachably coupling the housing element to the heat dissipation element.	Intrinsic support:
	Intrinsic support:	Specification:  • Fig. 4 (450).
	'604 Patent at 4:20-25, 4:43-49, 4:59-64, 5:18-24, 6:18-24, 6:46-53, 7:25-28, 7:42-51, 7:55-67, 8:1-24, FIGs. 1 and 3, claims 1 and 11-12.	<ul> <li>Abstract ("The light-emitting module further comprises a housing element which matingly connects with the heat dissipation element")</li> <li>4:43-49 ("The housing element further</li> </ul>
	Extrinsic support:	includes a fastening system to secure the various components of the light-emitting module together. Each of the heat dissipation
	1: to separate esp. from a larger mass and usually without violence or damage, 2: disengage	element, substrate and housing element can be modularly formed, thereby enabling

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	withdraw. <i>Detach</i> , MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (11 <sup>th</sup> ed. 2012).	interchangability of these components, thereby providing versatility to the light-emitting module")
	'604 Patent, Notice of Allowance, October 23, 2007.	Extrinsic support:
	Stephen L. Buchwalter et al., Cleavable Epoxy Resins: Design for Disassembly of a Thermoset, 34 J. of Polymer Sci.: Part A: Polymer Chemistry 249-260 (1996)	2014.06.10 Applicant Response to European Office Action re EPO Application No. 06741539.8  o "There is nothing in D2 that would contribute to the arrangement of DI, thereby providing an arrangement pointing towards the solution proposed in the present application (or vice versa). More specifically, as the cover as shown in Fig. 2 or Fig. 3 in D2 does not comprises any fastening means for a detachable coupling of a housing element to a heat dissipation element, there is no guidance for the skilled person towards the present invention.  The Examiner states that the cover in Fig. 3 in D2 is coupled to the heat sink by the flange at the edge and a holder. However, it will be appreciated that the holder is not a part of the cover, leading to an inconvenient arrangement. In contrast, the integrated fastening means of the housing element in the present invention provides a convenient coupling arrangement. Furthermore, the holder of D2 does not provide a secure, releasable coupling of the cover to the heat sink."  2013.12.05 European Patent Office communication USPN 6,045,240 (Fig. 3)

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
thermally connected (claim 1)	Plain and ordinary meaning; however, to the extent that the Court deems a construction is required: "Transfer via thermal conduction, convection, or radiation."  Intrinsic support:  '604 Patent at 4:19-20, 4:26-29, 6:56-60, 7:8-17, 8:39-47, 8:63-65, FIGs. 1 and 3, and claims 1, 13, and 14.  Extrinsic support:  "1. joined or linked together" <i>Connected</i> , MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY, (11th ed. 2012).	"connected via thermal conduction, convection, or radiation; not thermally insulated"  Intrinsic support:  Specification:  8:44-47 ("In embodiment of the present invention, thermal conductivity between the substrate and the heat dissipation element can be enhanced by a thermally conductive material for example a thermal epoxy or thermal grease.")  8:63-65("The substrate 503 can be a MCPCB, for example, which can be thermally connected to the heat dissipation element.")  6:56-65("In one embodiment of the present invention, as illustrated in FIG. 1, the heat dissipation element may be a heat sink formed from a thermally conductive material such as aluminium, ceramic or other thermally conductive material as would be readily understood by a worker skilled in the art. The passive heat dissipation capabilities through thermal convection, radiation, or conductance of this format of heat dissipation element may be enhanced by measures such as increasing the surface area through which heat dissipation occurs.")
thermally coupled (claim 1)	Plain and ordinary meaning; however, to the extent that the Court deems a construction is required:	"connected via thermal conduction, convection, or radiation; not thermally insulated"

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	"Transfer via thermal conduction, convection, or radiation."	Intrinsic support:
	Intrinsic support:  '604 Patent at 4:19-20, 4:26-29, 6:56-60, 7:8-17, 8:39-47, 8:63-65, FIGs. 1 and 3, and claims 1, 13, and 14.  Extrinsic support:  "1 a: to connect for consideration together b: to join for combined effect 2a: to fasten together: link" <i>Couple</i> , MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY, (11 <sup>th</sup> ed. 2012).  "Energy transfer between circuits, equipments, or systems." <i>Coupling</i> , CONCISE DICTIONARY OF ENGINEERING (1 <sup>st</sup> Ed. 2014).  "1. To link together; connect" <i>Couple</i> , THE AMERICAN HERITAGE DICTIONARY (4 <sup>th</sup> ed. 2000)	Specification:  S:44-47 ("In embodiment of the present invention, thermal conductivity between the substrate and the heat dissipation element can be enhanced by a thermally conductive material for example a thermal epoxy or thermal grease.")  7:8-17(" In one embodiment of present invention, closed or open loop multiphase cooling mechanisms such as heat pipes or thermosyphons for example, may be employed for further heat dissipation, wherein these cooling mechanisms can be thermally coupled to the light-emitting module. In another embodiment, active cooling measures can be thermally coupled to the light-emitting module wherein these active cooling measures can comprise forced convection or electro-thermal cooling mechanisms such as employed in Peltier Coolers")  6:56-65("In one embodiment of the present invention, as illustrated in FIG. 1, the heat dissipation element may be a heat sink formed from a thermally conductive material such as aluminium, ceramic or other thermally conductive material as would be readily understood by a worker skilled in the art. The passive heat dissipation capabilities through thermal convection, radiation, or conductance of this format of heat dissipation element may be enhanced by measures such as increasing the surface area through which heat dissipation occurs.")

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
housing element including a transparent region (claim 1)	Plain and ordinary meaning; however, to the extent that the Court deems a construction is required: "A housing part including a transparent region"	"a single structure having a transparent region"  Intrinsic support:
	Intrinsic support:  '604 Patent at 3:10-12, 5:38-41, FIGs. 1-4, and claims 1-5.  Extrinsic support:  "a part: a COMPONENT" <i>Element</i> , CAMBRIDGE INTERNATIONAL	Specification:  o Fig. 1(40).  o Fig. 3(40).  o Fig. 4.  o 8:21-24 ("In one embodiment, the optical element can be formed as a separate component and can be coupled to the housing element. The optical element can be configured to be permanently or releasably coupled to the housing element.")
	CAMBRIDGE INTERNATIONAL DICTIONARY OF ENGLISH (1995)  "1 a component part or group; a contributing factor or thing." <i>Element</i> , OXFORD AMERICAN DICTIONARY OF CURRENT ENGLISH (1999)	o 8:25-27("In an alternate embodiment, the housing element and one or more optical elements may be integrally formed as a single unit and fabricated from the same material.") o 4:50-64 ("In one embodiment of the present invention, an optical element is associated with the housing element and may be in the form of a lens, for example, and can enable a desired level of manipulation of the light emitted from the light-emitting elements. For example, the light may be dispersed, focused or redirected by the optical element to achieve a particular illumination effect. Different optical elements with different optical characteristics may be used for manipulation of the light emitted by the light-emitting elements, as would be readily understood. In one embodiment, the optical element can be readily interchanged or replaced to meet desired lighting

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		requirements. Furthermore, the optical element can be structurally integrated into the housing element, or separable and connectable to the housing element, for example.")

#### **'253 PATENT**

### Claims 16 and 30

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
a heat sink	Plain and ordinary meaning.	"a heat sink having a surface at a top end and another
comprising an		surface at a bottom end"
upper surface and a	Intrinsic support:	
lower surface		Intrinsic support:
(claims 16 and 30)	'253 Patent, 2:4-13, 2:31-57, 5:50-59, 6:59-67,	
	7:10-67, 8:1-51, 9:62-67, 10:1-14, FIGs. 8 and 9.	Specification:
		Fig. 8 (310, 310a, 310e, et al.)
	Extrinsic support:	Fig. 11 (320, 320b, 320bb, 320c., et al.)
		Fig. 12 (1205a, 1205b, 1205c).
	"1. A mounting base, usually metallic, that	· Fig. 13(320ca).
	dissipates, carries away, or radiates into the	• 6:62-66("Similarly, the substrate 306 is mounted
	surrounding atmosphere the heat generated	to a bottom surface 310 a of the heat sink 310 by one or
	within a semiconductor device. The package of	more solder joints, plugs, epoxy or bonding lines, and/or
	the device often serves as a heat sink, but, for	other means for mounting an electrical/optical device on a
	devices of higher power, a separate heat sink on	surface.")
	which one or more packages are mounted is	• 7:23-27("With reference to FIGS. 3-10, the bottom
	required to prevent overheating and consequent	surface 310a of the heat sink 310 includes a substantially
	destruction of the semiconductor junction. 2. A	round member 310b with a protruding center member
	mass of metal that is added to a device for the	310c on which the LED package 305 is mounted.")
	absorption of or transfer of heat away from	· 7:32-35("In certain alternative exemplary
	critical parts. Generally made from aluminum to	embodiments, the bottom surface 310 a may include only
	achieve high heat conductivity and light weight,	a single, relatively flat member without any protruding
	most heat sinks are of one-piece construction.	center member 310c.")
	They may also be designed for mounting on	· 7:36-37("Fins 311 extend substantially
	printed circuit boards." <i>Heat Sink</i> , MODERN	perpendicular from the bottom surface 310 a, towards a
	DICTIONARY OF ELECTRONICS (7 <sup>th</sup> ed.	top end 310 e of the heat sink 310.")

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	"A device that is employed to disposed of unwanted heat in a circuit and prevent an excessive rise in temperature. Heat sinks are particularly useful for protecting transistors in power applications." <i>Heat Sink</i> , OXFORD DICTIONARY OF ELECTRONICS AND ELECTRICAL ENGINEERING (5 <sup>th</sup> ed. 2018)	<ul> <li>7:65-8:3("In certain additional alternative exemplary embodiments, the bottom surface 310 a of the heat sink 310 may not include the round member 310 b. In these embodiments, the LED package 305 is coupled directly to the core 905, rather than to the round member 310 b")</li> <li>8:4-8 ("As illustrated in FIG. 10, the heat sink 310 is configured to dissipate heat from the LED package 305 along a heat-transfer path that extends from the LED package 305, through the bottom surface 310 a of the heat sink, and to the fins 311 via the core 905.')</li> <li>8:26-32("With reference to FIGS. 3-8 and 11, the reflector housing 320 includes a substantially round member 320 a having a top end 320 b and a bottom end 320 c. Each end 320 b and 320 c includes an aperture 320 ba and 320 ca, respectively. A channel 320 d extends through the reflector housing 320 and connects the apertures 320 ba and 320 ca.")</li> <li>8:33-37("The top end 320 b includes a substantially round top surface 320 bb disposed around at least a portion of the channel 320 d. The top surface 320 bb includes one or more holes 320 bc capable of receiving fasteners that secure the reflector housing 320 to the heat sink 310.")</li> <li>8:61-65("With reference to FIGS. 3-8, 11, and 12, when the reflector 1205 is installed in the reflector housing 320, outer side surfaces 1205 a of the reflector 1205 are disposed along corresponding interior surfaces 320 e of the reflector housing 320.")</li> <li>8:65-9:1 ("In certain exemplary embodiments, a top end</li> </ul>

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		of an optic coupler 330, which is mounted to a bottom edge 310 a of the top surface 320 bb.')  • 9:12-17 ("The bottom end 320 c of the reflector housing 320 includes a bottom surface 320 ca that extends away from the channel 320 d, forming a substantially annular ring around the channel 320 d. The surface 320 ca includes slots 320 cb that are each configured to receive a corresponding tab 1305 a from a trim ring 1305 (FIG. 13).")  • 9:23-30("Specifically, the trim ring 1305 can be installed on the reflector housing 320 by aligning each tab 1305 a with its corresponding slot 320 cb and twisting the trim ring 1305 relative to the reflector housing 320 so that each tab 1305 a travels up its corresponding ramped surface 320 cc to a higher position along the bottom surface 320 ca. Each ramped surface 320 cc has a height that slowly rises along the perimeter of the housing 320.")

#### **'320 PATENT**

## Claim 1

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
configured for generating light along an optical	Plain and ordinary meaning; however, to the extent that the Court deems a construction is required: "configured for generating light along	"the beams from one or more light-emitting diodes are set up to be parallel to a single optical axis"
axis (claim 1)	a straight line passing through the optical center."	Intrinsic support:  Specification:
	Intrinsic support:	o Fig. 2 (MT, CLM). o Fig. 3 (MT, CLM).
	'320 Patent at 2:5-8, 2:22-29, 2:52-57, 3:6-37, 4:19-29, 4:53-67, 5:1-3, 7:31-34, FIGs. 1 and 5, and claims 1 and 16.	o Fig. 4 (MT, CLM) o 5:35-39("A hollow hexagonal mixing tube MT with a reflective and electrically conductive material at its
	Extrinsic support:	inner surface serves to guide light from the light source LS to a plastic collimator CLM.") o 5:42-45 ("The antenna A is disposed on a ring-
	"A straight line passing through the optical center, it is also known as the <i>principal axis</i> ."  Optical Axis, DICTIONARY OF PURE AND	shaped PCB which allows the collimator CLM and thus light from the light source LS to pass through the opening inside the ring-shape.")
	APPLIED PHYSICS (1 <sup>st</sup> ed. 2000).	o 2:5-8 ("In a first aspect, the invention provides lighting device, such as a replacement lighting device, comprising a light source arranged to generate light along
		an optical axis, ") o 4:19-23 ("In a fourth aspect, the invention
		provides a method for arranging a Radio Frequency communication antenna within an outer enclosure of a lighting device, such as a replacement lighting device,
		comprising a light source defining an optical axis, ")

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
		o 7:31-34("To summarize, the invention provides a lighting device, such as a replacement lighting device, comprising a light source LS. e.g.  LEDs, for producing light along an optical axis OA.") o 7:41-45("Metallic components, including the heat sink (HS), having an extension larger than 1/10 of a wavelength of the RF signal are arranged below a virtual plane (VP) drawn orthogonal to the optical axis (OA) and going through the antenna (A).')  Extrinsic support:  American Heritage College Dictionary (2002) ·"along" o "On a line or course parallel and close to; continuously beside.
the heat sink forming at least a	Plain and ordinary meaning; however, to the extent that the Court deems a construction is	"at least a segment of an outer enclosure is formed by the heat sink such that the heat sink is exposed to outside."
portion of an outer enclosure (claim 1)	required: "the heat sink forms at least a part of an outer enclosure"	Intrinsic support:
	Intrinsic support:	Specification: o Figs. 1-5 (HS).
	'320 Patent at 1:48-56, 2:9-21, 2:22-26, 2:36-51,	o 1:66-2:4("Hence, according to the above
	2:57-61, 2:66-3:5, 4:19-29, 4:53-67, 5:21-31,	description, it is an object
	7:1-4, 7:19-30, 7:34-52, FIGs. 1 and 2.	to provide a lighting device, such as a miniature replacement lamp, which still allows a wide spatial range of wireless RF communication with the lighting device in
	Extrinsic support:	spite of a size that is so small that a very

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	"A part or share of something larger." <i>Portion</i> , CAMBRIDGE INTERNATIONAL DICTIONARY OF ENGLISH (1995)	effective heat sink is needed to remove the unavoidable heat dissipation in the light source.") o 2:5-21 ("In a first aspect, the invention provides lighting device, such as a replacement lighting device, comprising an outer enclosure partly formed by the heat
	"1 a part of any whole, either separated from or integrated with it" <i>Portion</i> , RANDOM HOUSE WEBSTER'S UNABRIDGED DICTIONARY (2 <sup>nd</sup> ed. 1997)	sink,,") o 4:9-11("The outer enclosure preferably comprises a transparent or translucent part arranged allowing light from the light source to penetrate.') o 4:53-63 ("FIG. 1 illustrates a simple sketch of a
	"3 a: a part of a whole b: a limited amount or quality" <i>Portion</i> , WEBSTER'S THIRD INEW INTERNATIONAL DICTIONARY (1993)	section through a lighting device embodiment with an outer enclosure ENC in the form of an upper and a lower part, wherein the lower part is a metal housing HS and the upper part UEP is a non-metallic material, e.g. a
	"1 a part or share." <i>Portion</i> , OXFORD AMERICAN DICTIONARY OF CURRENT ENGLISH (1999)  "1. A mounting base, usually metallic, that	polymeric material. The metal housing HS serves as heat sink to transport heat away from the light source LS positioned within the enclosure ENC. The light source LS generates light along an optical axis OA, and the light escapes the outer enclosure ENC through a transparent or
	dissipates, carries away, or radiates into the surrounding atmosphere the heat generated within a semiconductor device. The package of the device often serves as a heat sink, but, for	translucent part of the upper enclosure part UEP. ") o 5:21-29 ("The outer enclosure has a back part BP in the form of a plastics, where the power connector PCN penetrates the outer enclosure. A middle part of the outer
	devices of higher power, a separate heat sink on which one or more packages are mounted is required to prevent overheating and consequent destruction of the semiconductor junction. 2. A	enclosure is in form of a metal housing HS with a rib outer structure and connected to the heat sink so as to effectively transport heat from the light source LS. E.g. the metal housing HS is formed by aluminium. The upper
	mass of metal that is added to a device for the absorption of or transfer of heat away from critical parts. Generally made from aluminum to	part of the outer enclosure is in the form of a plastic front cap FC.") o 1:56-62("US 2007/0252528 describes a lighting

TERM/PHRASE	PLAINTIFFS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE	DEFENDANTS' PROPOSED CONSTRUCTION AND INTRINSIC AND EXTRINSIC EVIDENCE
	achieve high heat conductivity and light weight, most heat sinks are of one-piece construction. They may also be designed for mounting on printed circuit boards." <i>Heat Sink</i> , MODERN DICTIONARY OF ELECTRONICS (7 <sup>th</sup> ed. 1999).  "A device that is employed to disposed of unwented heat in a circuit and prevent on	fixture or luminaire, such as used in street-lighting, incorporating an RF antenna. However, the RF antenna is placed outside the lighting device forming the light source, rather the RF antenna is placed in a portion of the external housing which is made of a non-shielding material that does not disturb RF waves in reaching the antenna.")
	unwanted heat in a circuit and prevent an excessive rise in temperature. Heat sinks are particularly useful for protecting transistors in power applications." <i>Heat Sink</i> , OXFORD DICTIONARY OF ELECTRONICS AND ELECTRICAL ENGINEERING (5 <sup>th</sup> ed. 2018)	Extrinsic support:  US 2007/0252528  e.g., Fig. 1 (12, 14)  ¶18 ("The housing 11 comprises an upper enclosure portion 12 fabricated from a suitable weather resistant and heat resistant material, such as metal or
	"2. The case or housing of apparatus, or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts, or to protect the equipment from physical damage." <i>Enclosure</i> , THE AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS (7 <sup>th</sup> ed. 2000).	rugged plastics material. Where the upper enclosure portion 12 is fabricated from metal, it is preferably earthed in accordance with normal electrical installation practices. The upper enclosure portion 12 is preferably opaque to prevent light escaping therefrom in accordance with conventional light pollution and efficiency legislation as may be in force. The upper enclosure portion 12 preferably includes a mounting assembly (not
		shown) for retaining the principal components of the illumination system 20, e.g. the electrical control system elements 23, 24, 25 and 28, as well as the reflector 22 and a socket for receiving the lamp 21.')  • ¶19 ("The housing also includes a lower enclosure portion 14 which is transparent or translucent through which optical output of the lighting fixture is directed.

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		Preferably, the optical output is directed downwards to street level. Preferably, the lower enclosure portion 14 is fabricated from transparent polycarbonate material using an injection moulding process, although any suitable translucent weatherproof material can be used, and any suitable fabrication method can be used.')  American Heritage College Dictionary (2002) ."outer"  o "located on the outside, external"  New Oxford American Dictionary (2005) ."outer"
		o "outside, external"